REMARKS

Entry of the foregoing, reexamination and reconsideration of the application identified in caption, as amended, pursuant to and consistent with 37 C.F.R. §1.111 and in light of the remarks which follow, are respectfully requested.

Claim 1 has been amended to indicate that the hard coat layer forms a concavo-convex structure as disclosed on page 8 of the specification. New claims 11-13 are directed to further aspects of the present invention. Support for claim 11 can be found in the specification at least in the paragraph bridging pages 8 and 9, and in Figure 1. Support for claim 12 can be found at least in the first full paragraph on page 14. Support for claim 13 can be found at least in the second full paragraph on page 14 of the specification. Claims 1-13 are now pending in this application.

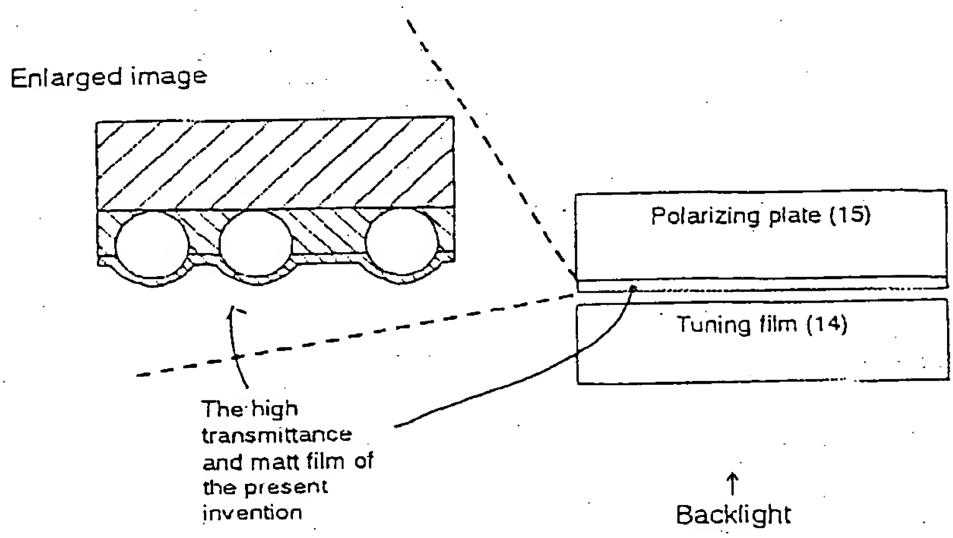
Turning to the Official Action, Claims 1-3, 5 and 7-10 stand rejected under 35 U.S.C. §103(a) as being obvious over U.S. Patent No. 5,747,152 (*Oka et al.*) in view of U.S. Patent No. 2,407,680 (*Palmquist et al.*) for the reasons set forth in paragraph (2) of the Office Action. Claims 4 and 6 stand rejected under 35 U.S.C. §103(a) as being obvious over *Oka et al.* in view of *Palmquist et al.* as applied to claims 1-3, 5 and 7-10 above, and further in view of U.S. Patent No. 4,963,624 (*Ida et al.*) for the reasons given in paragraph (3) of the Office Action. These rejections should be reconsidered and withdrawn for at least the following reasons.

The present invention resides in a film having a high transmittance (i.e., a total transmittance of light of at least 93.5%) and a matt property (i.e., a concavo-convex structure on the surface of the film and a haze value of 1.0% or more). The film comprises a

transparent substrate, a hard coat layer containing particles of a particle size of 1.0 to 10 μm which is larger than the thickness of the hard coat layer, and a low-refractive-index layer covering the hard coat layer and having a refractive index of 1.45 or less.

An important feature of the claimed invention is a film having a matt property as defined on page 8 of the specification, i.e., a concavo-convex surface, provided by particles in the hard coat layer which are larger in size than the thickness of the layer. The low-refractive-index layer does not affect the concavo-convex structure of the film. Figure 1 is a clear depiction of the structure of the claimed film.

The matt and high transmittance film of the present invention is to be used as a protective film of a polarizing plate which is to be provided on the backlight side of a liquid crystal display (Fig. 2). The film is arranged as a backlight-side protective film on a backside polarizing film, so that the matt surface faces a light-tuning film (14). This is shown as follows:



The film of the present invention does not cause non-uniformity on a display (moiré) that may occur when a polarizing plate and a light-tuning film contact each other due to heat expansion of the light-tuning film. Generally, there is a slight gap between the polarizing plate and a light-tuning film. However, some portions of the tuning-film non-uniformly contact the polarizing plate, due to heat expansion. To ensure that the film uniformly contacts the tuning film, the present invention provides a matt surface that has a convex-concave structure formed by using particles having a particle diameter larger than the thickness of the layer containing them.

Further, the presence of the low-refractive-index layer improves the anti-reflection property of the light transmittance film of the present invention.

Another embodiment of the invention is the feature of a film having an improved resistance to scratching due to a coefficient of kinetic friction of 0.2 or less. This feature is preferably provided by using a specific fluorine-containing polymer as described in the disclosure.

The language of the present claims specifies that the particle size ranges from 1.0 to 10 μm. If the particles are too large in size, the height of the protrusions in the concavo-convex surface will be too large and it would be difficult to form a uniform low-refractive-index layer, i.e., the anti-reflection property would be adversely affected. Further, larger particles vary significantly in size, and this results in surfaces where the height of the protrusions is too large. In this case, the resultant film will not support a tuning layer uniformly, i.e., only specific protrusions will contact a tuning layer thereby causing optical interference (e.g., Newton's rings) and/or scratches on the tuning layer.

If the particles are too small, this will increase haze.

Oka et al. '152 discloses a technique to develop the functions of ultrafine particles more efficiently, by forming a hard coat layer, in which ultrafine particles of 200 nm or less are localized in a high density. The reference also discloses an antireflection film utilizing the technique. *Palmquist et al.* '680 relates to light reflectors in which a cover layer (14 in Fig. 1) is provided to make the outer surface of the reflectors flat. This feature prevents changes in light reflection characteristics of reflectors when water or the like contacts their surfaces.

Initially, Applicants take issue with the conclusion in the Office Action that the ultrafine particles used in *Oka et al.* '152 provide a matt property (page 2, third line from the bottom). The ultrafine particles disclosed in *Oka et al.* '152 have a particle size of not more than 200 nm (column 11, line 57). Ultrafine particles having a size of not more than 200 nm as employed in the *Oka et al.* reference are too small to provide a matt property in view of the wavelength of visible light (about 300 nm to 800 nm). Hence, in the embodiment of Fig. 14 in *Oka et al.* '152, the antireflection film 12 does not have a matt property. Use of film 12 at the backlight-side of a polarizing plate does not give a polarizing plate having a matt surface at the backlight-side.

The Office Action relies on *Palmquist et al.* '680 as allegedly suggesting substituting particles providing a concavo-convex surface for the ultrafine particles used by *Oka et al.* '152. *Palmquist et al.* '680 does not relate to films having a matt surface and high transmittance but only to reflectors. The particles used in the secondary reference have to function by controlling the reflection of light in reflectors (see column 1, lines 1 to 11).

Further, the gist of the invention of the *Palmquist* reference is to form a cover layer as an outermost surface on the lenticular surface, thereby making the outermost surface flat. Also, in addition to different functions, the sizes of the respective particles required in the *Oka et al.* and *Palmquist et al.* patents are significantly different. A specific feature of the invention disclosed in *Oka et al.* '152 resides in a hard coat layer in which ultrafine particles are localized.

Specifically, in the *Oka et al.* reference, the ultrafine particles have a size of not more than 200 nm (0.2 μm), and they are contained in a hard coat layer of a thickness of not less than 0.5 μm (column 27, line 48), i.e., the particles do not project from the surface. In contrast, the particles disclosed in the *Palmquist et al.* reference are not ultrafine particles as defined in the *Oka et al.* reference. In the *Palmquist et al.* patent, the particle sizes are as follows. The upper limit is about 50 mils (1250 μm), the preferred size does not exceed about 10 mils (250 μm), and excellent results have been obtained with a size of approximately 5 to 6 mils (125 to 150 μm) (see column 9, lines 54 to 75). Particles of 1 mil (25 μm) or less also can be used. It should be noted that particles of a size of 1 mil (25 μm) are 125 times larger than the maximum particle size of 200 nm disclosed in the *Oka et al.* reference.

Even if those of ordinary skill were motivated to substitute the particles of the *Palmquist et al.* patent for those of the *Oka et al.* patent, there would be no reasonable expectation of successfully producing a film having a matt surface and high transmittance. Those of ordinary skill would have difficulty in selecting the suitable size of particles to realize a matt and high transparent film. As described above, the *Palmquist et al.* reference

states that the size of particles can be selected from very wide ranges (less than 1 mil to up to 50 mils). In addition to the above, neither reference discloses nor suggests that such a matt surface is useful in preventing moiré in a display. It would be difficult, even for a person of ordinary skill in the art, to apply the teachings in the *Palmquist et al.* reference to that of the *Oka et al.* reference, with the anticipation of attaining a matt and high transmittance film suitable to prevent the moiré effect.

The patent to *Ida et al.* does not supply the aforementioned deficiencies of the basic combination. *Ida et al.* '624 relates to a methacryl resin article having light diffusing functions. A 2 mm-thick methacryl resin sheet is prepared by dispersing cross-linked polymer beads having a size of 1 to 16 μm in a methacryl resin to impart light-diffusing functions. The Examiner relies on *Ida et al.* '624 for allegedly suggesting the equivalence of the polymer beads and inorganic particles.

The *Ida et al.* reference does not disclose using the polymer beads to form a matt surface. The cross-linked polymeric beads are disclosed as having a size of 1 to 16 μm. In the working examples, the beads are included in a layer having a thickness of 2 mm. This combination of particle size and layer thickness does not result in a matt surface as in the presently claimed invention.

Furthermore, the *Ida et al.* reference employs a suspension polymerization method to form the cross-linked polymer particles. In general, cross-linked polymer particles prepared by this method cannot have a particle size distribution of 0.2 or less in terms of coefficient of variation. In other words, it is difficult to prepare monodisperse particles by that method.

Therefore, Applicants believe that the *Ida et al.* reference neither discloses nor suggests use of monodisperse transparent fine particles as defined in the present invention (claim 3).

For at least the above reasons, the §103(a) rejections should be withdrawn. Such action is earnestly requested.

Applicants respectfully request that the Examiner acknowledge the priority claim under 35 U.S.C. §119 and receipt of the certified copy of the priority application filed in the International Application.

For at least the above reasons, it is apparent that no *prima facie* case of obviousness exists. Accordingly, withdrawal of the §103(a) rejections is respectfully requested.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order, and such action is earnestly solicited.

If there are any questions concerning this paper or the application in general, the Examiner is invited to telephone the undersigned.

Respectfully submitted,

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